

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
14 October 2004 (14.10.2004)

PCT

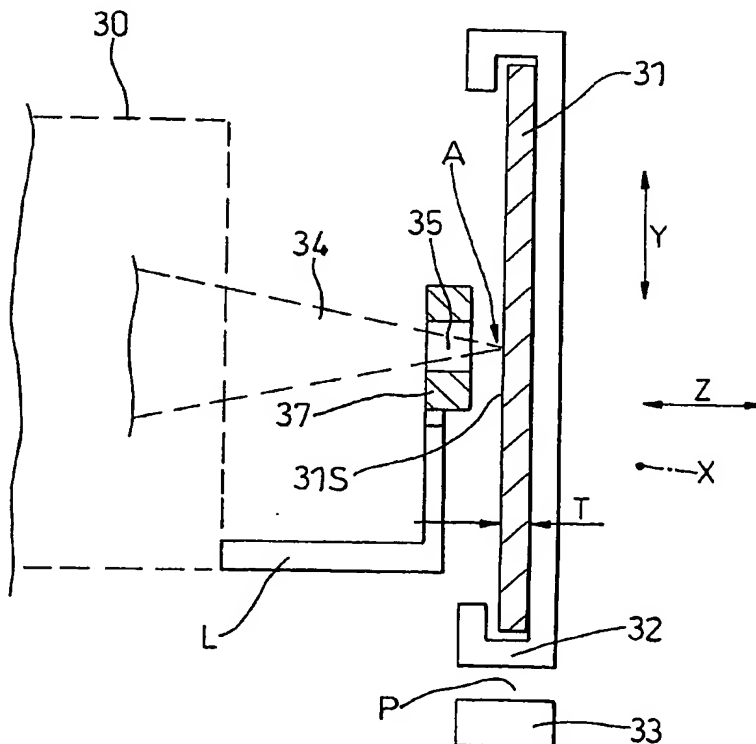
(10) International Publication Number  
**WO 2004/087363 A1**

- (51) International Patent Classification<sup>7</sup>: **B23K 26/04**
- (21) International Application Number:  
PCT/GB2004/001432
- (22) International Filing Date: 1 April 2004 (01.04.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
0307723.7 3 April 2003 (03.04.2003) GB
- (71) Applicant (for all designated States except US): **EX-ITECH LIMITED** [GB/GB]; Oxford Industrial Park, Yarnton, Oxford OX5 1QU (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **BANN, Robert** [GB/GB]; 8 Wykham Gardens, Banbury OX16 9LP (GB). **SYKES, Neil** [GB/GB]; 18 Belmont, Wantage OX12 9AS (GB).

- (74) Agent: **ROCK, Olaf, Colin**; Rock and Company, Trelawn, The Green, Cassington, Witney OX29 4DN (GB).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: POSITIONING METHOD, APPARATUS AND A PRODUCT THEREOF



(57) Abstract: A method of laser micro-machining, by means of a laser, a work piece (31) of the type described comprising the steps of: locating the workpiece on a carrier forming a part of a transport system whereby the carrier can be displaced along a path (P) parallel to an X-axis of the workpiece, a Y-axis lying transverse the path, and a Z-axis lying transverse the path; focussing an image generated by means of an output beam from the laser at a working datum position (A) defined relative to the path which path is established by means of the transport system to traverse the first datum position; a plane defined by the X- and Y- axis lying substantially perpendicular to the output beam; and displacing the workpiece along the path by way of the transport system so as to enable the work-piece to be subject to micro-machining by way of the laser characterised by the steps of: maintaining distance between the datum position and a current first surface position of the work-piece in the vicinity of the datum position ; and varying the working datum position to accord with local variations in thickness of the workpiece so that the working datum position is maintained at a fixed distance relative to a surface of the workpiece apparatus therefor.



**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*